DOCUMENT RESUME

ED 479 560 IR 022 166

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TITLE	ECO TECH LINK: PT3 Grant Builds Technology Circles in the K-18 Community.
PUB DATE	2002-10-00
NOTE	9p.; In: E-Learn 2002 World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education. Proceedings (7th, Montreal, Quebec, Canada, October 15-19, 2002); see IR 022 093.
AVAILABLE FROM	Association for the Advancement of Computing in Education (AACE), P.O. Box 3728, Norfolk, VA 23514. Tel: 757-623-7588; e-mail: info@aace.org; Web site: http://www.aace.org/DL/.
PUB TYPE	Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS
DESCRIPTORS	Computer Assisted Instruction; Credentials; Educational Development; *Educational Finance; *Educational Technology; Elementary Secondary Education; *Grants; Higher Education; Program Development; Teacher Education; Technology Integration

ABSTRACT

Through the vehicle of the PT3 grant program, ECO TECH LINK has built a strong consortium to support technology circles of government, education and business in order to raise student achievement scores, shorten the time it takes to earn a teaching credential, and enhance the quality of teacher credential courses. The ECO TECH LINK grant enables targeted teacher candidates, including women, minorities, military and high tech professionals, to earn a preliminary teaching credential using a combination of online, face-to-face, video and extended field experience. Math and science curricula with environmental themes are the "real world" framework for online courses providing anytime and anyplace access. This paper describes the need, design, structure, progress and evaluation of the PT3 grant during the first year of implementation. (Author)

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ECO TECH LINK
PT3 Grant Builds Technology Circles in the K-18 Community

Abstract: *Through the vehicle of the PT3 grant program, ECO TECH LINK has built a strong consortium to support technology circles of government, education and business in order to raise student achievement scores, shorten the time it takes to earn a teaching credential, and enhance the quality of teacher credential courses. The ECO TECH LINK grant enables targeted teacher candidates, including women, minorities, military and high tech professionals, to earn a preliminary teaching credential using a combination of online, face-to-face, video and extended field experience. Math and science curricula with environmental themes are the "real world" framework for online courses providing anytime and anyplace access. This paper describes the need, design, structure, progress and evaluation of the PT3 grant during the first year of implementation.*

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Almost a decade ago, Goodland (1994) felt that "very little attention has been given to the role of reforming teacher education." Concurrently, the Office of Technology Assessment, in its report about teachers and technology to Congressional committees, acknowledged that the "interaction between K-12 schools and teacher education programs is an important, generally overlooked variable". (OTA, 1995) Recently President Bush projected in a press release, "A Quality Teacher in Every Classroom", that school districts across the nation will need to hire 2 million teachers over the next ten years. He announced an initiative that will provide a $2.85 billion grant program to enable school districts to recruit and train teachers and principals. In order to meet this challenge, educators have to be willing to accept that "our world is far more complex than ever before, and those who succeed are those who find new and creative ways to solve problems and open up new opportunities." (Segal, 2000)

With this background in mind, a strong consortium for reform in education consisting of government, education and business designed the ECO TECH LINK grant as a technology circle in order to raise student achievement scores, shorten the time it takes to earn a teaching credential in California, and enhance the quality of teacher credential courses. ECO TECH LINK builds upon the current capacity of the National University, the San Diego Natural History Museum and two high need school districts: Cajon Valley and Carlsbad. The PT3 (Preparing Tomorrow's Teachers to Use Technology) program awarded the grant to National University in July 2001 for a three-year implementation. Specifically, the grant restructures the online teacher preparation program at National University in California by implementing an intensive seven-month teacher-training program. The ECO TECH LINK grant enables targeted teacher candidates, including women, minorities, military and high tech professionals, to earn a preliminary teaching credential using a combination of online, face-to-face, video and extended field experience. Additional partners include Cox Communications; Datel Corporation; the Resource Conservation District of San Diego; U.S. Forest Service; the Environmental Trust; and the San Diego Water Authority. TELESIS Corporation will serve as the external evaluator.

National University along with Cajon Valley Union School District, San Diego Natural History Museum and Carlsbad School District modified present teacher education courses to create interactive web-based units. Math and science curricula with environmental themes are the "real world" framework for online courses providing anytime and anyplace access. Teacher

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candidates and college professors work with veteran K-12 master teachers to create meaningful standards-based methods courses using California State Content Standards and National standards for teaching and learning. ECO TECH LINK created training sessions that will be disseminated statewide using the thirteen National University regional campuses. During the second year of the grant, the California Commission on Teache r Credentialing (CCTC) will validate the seven-month teacher credential program and provide accreditation. Cox Communications will provide the infrastructure to connect the San Diego Natural History Museum and all classrooms via the new museum facility. Cox has agreed to donate video studio time and equipment for filming video clips as well as staff time, and Datel Corporation is committed to providing deeper orientation and training for existing and new hardware supplied to National University. Two groups are the main targets of recruitment for this unique program (1) military professionals who are transitioning to civilian life; and (2) high tech professionals who are transitioning from businesses that have had to down size. All teacher candidates will be working on graduate degrees. National University will assist candidates in establishing student loans and encourage placement of graduates at employment sites that qualify for loan reimbursement due to high levels of poverty based on statistics from the California State Department of Education.

Prior to selecting the sequence of courses and the avenue of recruiting, this PT3 grant held a Design Session workshop for all grant consortium members. The daylong session brought people together in a unique way as it provided the environment for participants to work in three teams to "Build-A-Model" using "Cause and Effect" diagrams based on the work by Dr. Edwards Deming in Japan. The diagrams describe each team's view of the effects they wanted to create through the grant process by carefully analyzing the causes of philosophy, culture, policy, and strategy on the possible success of the grant design. A booklet was developed from the workshop recording all concepts and key ideas. After the grant management team digested the information gleaned from the booklet, it became apparent that the original grant design needed to be refined to facilitate evaluation of objectives and their matching indicators for the PT3 Performance Reports.

Logic Model for PT3 ECO TECH LINK Project Evaluation

Goal 1.0 To increase the use of technology in National University credential courses to produce pre-service teachers capable of delivering a technology infused curriculum focusing on science and math.						
Resources	Activities	Outputs	Customers Reached	Short-term Outcomes	Intermediate Outcomes	Long Term Outcomes
NU Teacher Prep Courses; MSP/CAN Curriculum budget; Staff; Partners	Planning sessions; collaborations for revisions, blending & technology enhancement to NU & MSP/CAN curricula	Prototype curriculum; Procedures to revise, evaluate against CTAP and National Standards; & improve effectiveness	NU Faculty & K-12 Master Teachers	Pilot NU and MSP/CAN pilot curricula are completed & ready for delivery	Model curriculum for Teacher Credential program created that integrates math & science skills with technology	Use of technology in NU credential courses increases to produce pre-service teachers who can deliver a technology infused curricula focusing on math & science

Goal 2.0 To increase the level of technology integration and application skills and resources in the K-18 classroom.						
"Teaching Digitally" curriculum; NU ed tech experts and Two school district & technology company partners; budget	e-College delivery via Internet; inventory & ed-tech equipment upgrade in targeted K-18 classrooms planned	# of NU faculty & # of master teachers trained via e-college; classroom technology upgrades completed	University Faculty; K-12 Master Teachers & Teacher Candidates; K-18 students	# Faculty and # Master Teachers Available to train/ mentor & evaluate teacher candidates increases	All participants have access to training via technology rich environments at the K-12 target schools	Level of technology integration, NU Faculty and Master Teacher skills and resources in K-18 classrooms increases

The logic model provided a road map for the management team to follow as they struggled with the scope of the project as each consortium member assumed responsibility for his or her part of the grant process. One of the greatest concerns became the infrastructure the consortium would have to put into effect as support for the pre-service teachers. In an attempt to put the task of recruitment of master teachers and pre-service teachers into perspective, the following questions were explored by the grant management team:

1. What are the roles, processes, purposes, and timelines required to modify the program sequence and enhance (revise) the courses? (See Inspiration Software document)
2. What are the criteria for selecting the Master Teachers? Who determines the criteria?
3. Who are involved in the selection process of Master Teachers?
4. When are Master Teachers selected?
5. When and how are Masters Teachers prepared?
   (create a community of learners that meet continuously)
6. How are NU and K12 course designers/enhancers selected?
7. Are teacher candidates placed in a few selected schools? Would such placements encourage a strong learning community?
8. How can we create on-ground and online community of learners among and between teacher candidates and Master Teachers?
9. Are multiple subject AND single subject teacher candidates recruited?

The next step was to clearly define the possible course sequences that would ensure high quality and rigor in the teacher credential program while shortening the students' timeline for completion. During each month for the first two months, pre-service teachers take two online methodology courses a month. In the third month, they begin their student teaching during a full day of school activities in the classroom. In the afternoon they take one online theory course per month in the computer lab at the school where they are doing their student teaching. The paradigm shift in this model is two fold: 1) students take the methodology courses before they take their theory courses; and 2) the curriculum from the theory courses in the afternoons can be implemented the next day in the classroom. After adding the Student Teaching Seminar, plus the fact that student teaching is 18 weeks long in California, the original plan of 6 months for training became 7 months, as shown in the table below.

Month	Multiple Subject Certificate	Single Subject Certificate
Prior to 1	CLD 600 Early Field Experience	CLD 600 Early Field Experience
1	CLD 615 Educational Foundations EDT 608 Computer Based Technology	CLD 615 Educational Foundations EDT 608 Computer Based Technology
2	CLD 605 Diverse Classroom CLD 611 Applied Psychology to Teaching	CLD 605 Diverse Classroom CLD 611 Applied Psychology to the Teaching ...
3	CLD 629 Student Teaching Seminar	CLD 629 Student Teaching Seminar
4	CLD 630A Student Teaching CLD 621A Methods for Language Development in 1st and 2nd Language	CLD 630A Student Teaching CLD 623 Teaching English Language Development
5	CLD 630B Student Teaching CLD 621B Methods for Language Arts and Teaching of Reading	CLD 630B Student Teaching CLD 624 Reading in the Content in Subject Area
6	CLD 630C Student Teaching CLD 622A C and I: History-Social Science, PE, and Visual and Performing Arts	CLD 630C Student Teaching CLD 625A Curriculum and Instruction
7	CLD 630D Student Teaching CLD622B C and I: Math and Science	CLD 630D Student Teaching CLD 625B Classroom Management

The decision making process modified the original grant logic model to include a pilot cohort of student teachers as a baseline instead of the larger group of 50 students initially planned. A new university policy mandating that students must pass applicable subject matter exams prior to the 5th credential course was one factor in this decision. The pilot cohort began with 10 teacher candidates, with the anticipation that grant program would enroll at least 50 teacher candidates each time at National University. Cajon Valley Union School District provided master teachers and K-8 school site placements for the pilot teacher candidates. Carlsbad School District provided master teachers and assisted in the placement of teacher candidates. The San Diego Natural History Museum – Museum to School Partnership Program: Communities Alive In Nature (MSP/CAN) provided science and ecology training to master teachers in order to help National University professors rewrite methods courses during the technology training sessions.

Three collaborative technology sessions were planned for the first year of the grant, with the agenda being driven by the technology needs of the master teachers in integrating multimedia and critical thinking skills into their daily curriculum. During the technology training sessions, participants formed small working groups with at least one master teacher, one student teacher and one National University professor. Each working group selected a grade level to write for, based primarily on the master teacher's area of expertise. This classroom grade-level experience was then integrated into the National University technology courses, making the courses more practical and useable for the teacher candidates. The master teachers knew the types of information that would be most directly useful in the classroom situation. The university teachers knew what outcomes were expected in the university course. The student teachers provided a point of view based on their freshness, enthusiasm and lack of exposure to the classroom.

At this point, the excitement began to build. The technology training provided by the workshop was viewed as beneficial for all participants. However, the real excitement was having time to work with peers on a technology project that would have a positive effect on thousands of future teacher candidates while developing working relationships among public school teachers, student candidates and university teachers. The master teachers were pleased their expertise was valued, and their voices were heard. The university teachers were most appreciative of these voices from the front line: the classrooms. The student teachers quickly immersed themselves in the technology project and steadily developed a feel for what was needed in the classroom, both at the public schools and university level. The "give and take" experienced by participants was such a pleasant energizer that all participants agreed to continue the process with other projects.

As a result of this technology training, the university courses now contain specific threads and assignments at distinct grade levels. Thus a candidate who is interested in teaching at the fifth grade level can follow the thread for that level and develop practical, as well as theoretical, knowledge specifically designed for fifth grade students. This knowledge becomes the beginning of a portfolio for student teaching. It is information based on actual classroom knowledge, and the master teachers are able to see their work become part of university courses.

Eco-Tech Link Outcomes Evaluation Plan Progress

The following information lists the goals, outcomes, and major activities during the first year of the grant implementation.

Goal 1.0 To increase the use of technology in National University credential courses to produce pre-service teachers capable of delivering a technology infused curriculum focusing on science and math.

Outcome: Model blended curricula for the National University (N.U.) teacher-credentialing program and K-12 classrooms are created which meet the State of California (CTAP) and national standards for educational technology competencies.

Major Activities: During the first technology training session, master teachers and NU faculty were divided into teams to evaluate the NU designated clearing credential course for California pre-service teachers: EDT 608 (Computer-Based Technology in the Classroom). They were given access to the online class template and asked to take the course as if they were a pre-service teacher in an interactive technology environment. Their feedback on how to enhance the course with science and math curriculum was discussed as a group, recorded on paper and provided to the management team for implementation. Many of the recommendations involved integrating student activities at multiple grade levels of K-3, 4-6, and 7-8 into the teacher-credentialing course to facilitate transference of material from the online courses into the classroom the next day.

During the second technology training session, emphasis was put on enhancing a teacher education credential courses. The first online course was reviewed, and the collaborative group applied their recommendations for enhancing CLD 625A (Curriculum and Instruction) in the areas of science and math as a model for three other classes: CLD 625B (Classroom

Management), CLD 622A (History-Social Science, PE and Visual and Performing Arts), and CLD 622B (Math and Science). Grant participants researched sources on the Internet on how to use technology to integrate science and math activities into curriculum that addresses standardized assessment tools, self-esteem, trends in assessment, and instructional planning skills. Application software skills became the successful organizational tools for this training session as the teams worked together on a beginning outline for each course. A ten-hour homework assignment completed the training session, allowing for reflection and additional research.

Goal 2.0 To increase the level of technology integration and application skills and resources in the K-18 classroom.

Outcome: ECO-TECH LINK Program participants have access to training via technology-rich environments in the K-12 target schools.

Major Activities: Technology training sessions were held to assess and increase the computer literacy levels of the master teachers and NU faculty in this grant. The grant participants, using the California Technology Assessment Profile (CTAP), took an online Pre-Test to measure their level of technology integration and application skills. The CTAP measures basic hardware; software packages and terminology; research tools; ethics and policies; information literacy; integration, student learning, and classroom management; communication through print media; and instructional technology in the areas of analyzing best practices, selection of appropriate technology resources, matching student learning styles to appropriate resources, effective learning environments, and security issues. A Post-Test will be given in June to complete the evaluation and research.

The grant management team performed a technology need assessment of master teachers in Cajon Valley School District and for NU faculty and later for the Carlsbad master teachers. The decision was to hold the training sessions in both Macintosh and PC labs to accommodate both levels of education. The first technology training session was held in a middle school setting with Macintosh computers; materials were developed for multiple levels of expertise among the master teachers. The first training included: follow-along exercises in PowerPoint with extensive screen captures and instruction; CD ROMS with text, videos, music, graphics and sounds for teachers to use as resources in the training and later in their own classrooms; a PowerPoint show based on the Wizard of OZ, demonstrating advanced skills in multimedia; an Internet Scavenger Hunt to teach research skills for a K-8 classroom setting; "value-added" Internet research using Web Quests; new web resources with images to meet the needs of developing Natural History Museum MSP/CAN projects with science emphasis for K-8 classrooms; file management; creating hyperlinks in documents; Acceptable Use Policies (AUPs) for school districts; digital camera usage; inserting images and sounds into projects; research on "how to design" rubrics based on examples from the Web; Web page creation in Word with graphics, text, tables, hyperlinks and HTML format, coupled with hands-on technical assistance. A wrap up session occurred at the end of each day to read the participant feedback forms to determine what went well and what would be needed in the next training session for both master teachers and NU faculty.

The second technology training session was held at the state of the art NU facility with a PC classroom. The change in platforms went seamlessly. The participants were amazed at how easy the PCs were to run and were able to cross platforms immediately. Information sessions and follow along structured exercises supported such topics as: search engines for the Web; Show and Tell presentations for Natural History Museum MSP/CAN electronic projects; a supervised library tour focusing on electronic databases, resources and ebooks; creating matrices and calculating percentages with graphs in Excel; web research for multimedia projects for the K-12 classrooms; and a videotaped walkthrough unveiling the improvements to the EDT 608 course, which they had evaluated and enhanced with activities in the first training session in January 2002.

The third technology training session was held to provide student teachers with similar technology skills and resources to integrate immediately into the student teaching classroom. It focused extensively on advanced PowerPoint multimedia and Web Quests, using screen captures again in the training materials with detailed, hands-on instruction. Master teachers and NU faculty were invited but not required to attend this session. In addition, the focus was on creating PowerPoint presentations that could be integrated into their daily lesson plans.

Goal 3.0 To expand and sustain the ECO-TECH LINK partnerships over the next 3 years.

Outcome: ECO-TECH LINK model is institutionalized statewide via nine regional National University sites and partnerships.

Major Activities: Enhancing just one of the teacher credential courses through this grant (EDT 608) has already benefited hundreds of students over the nine regions of California since the new version is currently being taught online. The enhanced course was offered online in March and April 2002 to a total of over 350 NU pre-service teachers who have to clear their California Clearing credential. The same amount and kind of students at NU will take the course in May and June 2002, raising the number to 700 of pre-service teachers who have completed the course with the new design from the grant. Beginning in July 2002, the EDT 608 course is no longer the clearing course for technology. Instead, at NU, it has been embedded in all teacher education credentialing programs, with an anticipated enrollment of 7,000 students a year, meeting the needs of school districts for science and math curriculum integrated with technology.

Goal 4.0 At least 80% of the pre-service teacher grant candidates will complete the ECO-TECH LINK program in seven months.

Outcome: At least 80% of the pre-service teacher candidates will complete the ECO-TECH LINK program in seven months. This goal will be measured every seven months on completion of a cohort group through their teacher credentialing cycle.

Major Activities:
None at this point because the grant management team redesigned the grant design process and inserted a prototype group of 10 pre-service teachers as a baseline group.

Goal 5.0 To expand the population of women and minority candidates who become fully credentialed pre-service teachers able to infuse technology in a science and math based curriculum.

Outcome: 80% of women and minority teacher candidates in each cohort will complete pre-credential requirements in seven months.

Major Activities:
None at this point, but plans are being made for innovative ways to support this population to ensure a high level of completion such as mentoring, cohort leaders, family oriented activities, and a new course in classroom behavior management taken prior to the student teaching experience.

References

Goodland, J. I. (1994, April). The national network for educational renewal. *Phi Delta Kappan*.

Office of Technology Assessment. (1995). Teachers and technology: making the connection. OTA-HER-616.

Segal, B. (2000). Technology and education: what's around the corner? *ECCO Output*. Retrieved April 10, 2002 from http://www.ecoo.org/e/output/feature221.html .

U.S. Department of Education. (2002, March 4). White House fact sheet: a quality teacher in every classroom. Retrieved April 6, 2002 from http://www.ed.gov/PressReleases/03-2002/wh-020304.html .

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